

ABSTRACT

SPECULATIVE SPECULATIONS: AN ORIGINAL COMPOSITION FOR MIXED ENSEMBLE AND RHYTHM, TEMPO AND TIME IN ELLIOTT CARTER'S *FIGMENT* AND *SHARD*.

by Christian J. Loebs

July, 2010

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This thesis is composed of two parts. The first part is an original composition *Speculative Speculations* for flute, clarinet, piano, percussion, violin, viola and cello and was premiered November 14, 2009 at the A. J. Fletcher Recital Hall, East Carolina University. The second part is an analysis of Elliott Carter's use of rhythm, tempo and time in two pieces, *Figment* for solo cello and *Shard* for solo guitar. These pieces are microcosms Carter's style found in his larger scale works.

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AND *SHARD*.

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by

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This thesis is dedicated to my parents David and Susan Loeb. Thank you for everything you taught me and for encouraging me to follow my dreams.

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PART 1: Speculative Speculations: An Original Composition.

Program notes

Speculative Speculations began as a piece for a reading session by the group Speculum Musicae. What is now the first movement was played during the reading and I thought the piece was complete. Not long after the reading session I had a lesson with David Rakowski. I showed him what I had written and he said it was the first movement of a multi-movement piece. This was a complete surprise to me as I had "finished" this piece. After some reflection on the piece and a conversation with Dr. Jacobs about this matter, I decided to see if there were other movements that had not been written yet. Over the next few months the second and third movements were written. David Rakowski was right. The first movement of the piece presents several thematic ideas that are developed in the second and third movements.

Approximately 11 min.

Performance notes

The score is a transposed score.

Accidentals carry through the measure unless otherwise indicated.

 unless otherwise indicated.

Tremolos with three lines are unmeasured.

Instrumentation

Flute/alto flute

B \flat clarinet/bass clarinet

Percussion: marimba/vibraphone/tom toms (4) (one player)

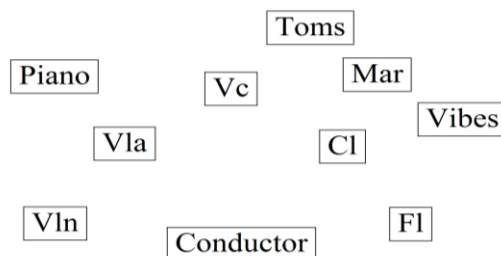
Piano

Violin

Viola

Violoncello

Suggested set up:



Speculative Speculations

Christian J. Loeb

Flute $\text{♩} = 60$ **Mysterious**
mp *ppp* *mp*

Clarinet in B \flat
mp *ppp*

Vibraphone / marimba
 vibes motor on slow (soft mallets)
p *mp* *ppp*

Piano

Violin $\text{♩} = 60$ **Mysterious**
ppp

Viola
ppp

Violoncello
ppp

Flute
mf *mp* *mp* *mp*

Clarinet in B \flat
mp *mf* *mp*

Vibraphone / marimba
p

Piano
pp *mf* *p*

Violin
p *ppp*

Viola
p *ppp*

Violoncello
p *ppp*

Violin
 pizz. *f* arco *mp* *3*

Viola
 pizz. *f* arco *mp*

Violoncello
 pizz. *f*

14

pp

mp

f

pp

mf

to Marimba (medium mallets)

pp

f

mf

mf

Red.

pizz.

f

pizz.

f

arco

mf

f

pp

p

mf

p

f

mf

f

pp

18

mp *pp* *pp* *mp* *pp* *f*

Marimba
(medium mallets)

f

pizz. *mf* *ff* *ff* *ff*

22 $\text{♩} = 150$

sfz as many notes as possible

pp *ppp* *mf*

sfz *ppp* *ord.* *pp* *mf*

arco sul pont. *ppp* *ord.* *pp* *mf*

sfz *ppp* *ord.* *pp* *mf*

29

pp *ord.*

37

pp

mp

f

mf

mf

mf

mf

46

(♩ = ♩) ♩=100

pp

mf

f

p

cresc.

sfz

sfz

ff

pp

p

cresc.

cresc.

f

54 **Energetic**

54 **Energetic**

mp

mf

mp

sfz

mf

Energetic

mf

mp

p

p

60

f

f

mf

f

f

mf

f

mf

f

mf

f

mf

pp

pizz.

pizz.

arco sul pont.

66

f *ff* *fff* *pp* *mf* *f* *ff* *fff* *rit.*

70

$\text{♩} = 60$ Mournful

p *pp* *fff* *ppp* *p* *ppp* *pizz.* *sul tasto* *mp* *ppp* *p* *ppp* *arco* *sul tasto*

Speculative Speculations II

♩=60 Mysterious

Alto Flute

Bass Clarinet in B \flat

Vibraphone/Marimba
vibes w/ bow, motor off soft mallet, motor on medium

Piano

Violin
sul pont. (♮)

Viola
sul pont. (♮)

Violoncello
sul pont. (♮)

ppp < p > ppp < mp > ppp < mf > ppp pp



8

mp mf mp pp mf mp mf

f pp mp mf

pizz. *f* arco sul pont. (♮) *pp* *pp < mp > pp*

pizz. *f* arco *p*

pizz. *f* arco sul tasto *pp*

16

mp

pp

> mp

p

to marimba

marimba

pp

sul pont.

pp

mp

pp

sul pont.

pp

mp

pp



23

mf

pp

ff

mp

pp

mf

ff

mf

ff

mf

arco

mf

pizz.

pp

mf

ff

10

64

mp mf mp

mp pp

p

p

arco sul pont.

pp mp pp

pp mp pp

70

mf ppp

vibes w/ bow, motor off

ppp < p > ppp < mp > ppp < p > ppp < p > ppp

sul pont.

ppp < p > ppp < mp > ppp < p > ppp < p > ppp

sul pont.

ppp < p > ppp < mp > ppp < p > ppp < p > ppp

arco sul pont.

ppp < p > ppp < mp > ppp < p > ppp < p > ppp

Speculative Speculations III

$\text{♩} = 90$ Energetic

Flute

Clarinet in B \flat

Tom toms

Piano

Violin

Viola

Violoncello

6

11

pp *mf* *subitof*

arco *mf* *pizz.* *f*

16

ppp *mp* *p*

arco *p* *arco* *p* *arco* *p*

22

mf

pp

mf

8va



26

mf

(8)

[illegible]

33

pp subitof

pp

pp mp

subitof

pp

subitof

pp

pp

pp

pp

pizz.

mp

42

mp

sul pont.

mp



48

pp

f

f

pp

f

64

mf

pizz.

mf



68

soft mallets

pp

sul tasto

subitopp

78

to toms

pp

sul pont.

ppp

arco sul pont.

ppp

arco sul pont.

ppp



86

f

toms

f

mf

3

pizz.

f

pizz.

f

pizz.

f

arco

f

arco

f

91

91

92

93

94

95

f

mf

pizz.

f

pizz.

f

pizz.

f

96

96

97

98

99

100

mf

mf

pp

mf

f

arco

mf

arco

mf

100

subitof

subitof

to marimba

subitof

pp

pizz.
f

pizz.
f

pizz.
f



105

mf

mf

pizz.

pizz.

pizz.

109

mf

(8)

mf

pizz.

pizz.

112

dim.

dim.

pizz.

pizz.

116

pp

mf

pp

mf

marimba

pp

pp

121

ppp

arco

arco

mp

125

mp

mp

mp

mp

129

mp

mp

mp

mp

arco

mp

arco

arco

mp

133

Musical score for measures 133-136. The score consists of four systems. The first system has a treble and bass staff. The second system has a treble and bass staff. The third system has a treble and bass staff. The fourth system has a treble and bass staff. The music features various rhythmic patterns, including eighth and sixteenth notes, and rests. There are also some accidentals and dynamic markings.

137

Musical score for measures 137-140. The score consists of four systems. The first system has a treble and bass staff. The second system has a treble and bass staff. The third system has a treble and bass staff. The fourth system has a treble and bass staff. The music features various rhythmic patterns, including eighth and sixteenth notes, and rests. There are also some accidentals and dynamic markings.

140

Musical score for measures 140-143. The score is written for a piano with four staves. The top two staves are in treble clef, and the bottom two are in bass clef. The key signature has one flat (B-flat). The music features a complex rhythmic pattern with many eighth and sixteenth notes, often beamed together. There are several slurs and accents throughout the passage.



144

Musical score for measures 144-147. The score continues with four staves. The key signature changes to two flats (B-flat and E-flat). The music continues with the same complex rhythmic patterns, including many beamed eighth and sixteenth notes. There are slurs and accents, and some notes are marked with a 'b' (basso) or a 'tr' (trill).

148

148

149

150

151



152

152

153

154

155

to toms

156

156 157 158 159



160

160 161 162 163

164

164

f

mf



167

167

ff

f

pp

ff

pizz.

arco

ff

pizz.

arco

ff

pizz.

arco

ff

PART 2: Rhythm, Tempo and Time in Elliott Carter's *Figment and Shard*

Introduction

“Rhythm is the least advanced part of music; it is there that a vast field for genius remains....Great things remain to be discovered in this aspect of the art.”¹

François-Joseph Fétis is not the only composer or theorist to contemplate the yet undiscovered possibilities in rhythm and how there seems to be opportunity for advancement. Pieces from the Renaissance frequently make use of hemiola or change from simple to compound meters. Pieces from the Classical era contain asymmetrical hyper-measures and phrases. Around the beginning of the 20th century some composers began to experiment further with rhythm. Charles Ives experimented with multiple simultaneous tempos and polyrhythms. Henry Cowell tried to create a new system of rhythmic notation but used it in only one piece, *Fabric*. In the early 20th century it seems that composers were much more interested in the emancipation of dissonance over the emancipation of rhythm. Elliott Carter was a notable early exception, and remains a guiding figure among composers interested in exploring other possibilities with rhythm, tempo and time.

Jonathan Bernard proposes that Carter's exploration of rhythm and time is related to his education at Harvard as an English major with philosophy and classics as secondary concentrations as well as his exposure to other arts such as dance and film.² Bernard draws direct connections between Carter's exposures to literature, with multiple story lines developing simultaneously; dance, with a constant sense of motion and connection from moment to moment;

¹ Arlin, Mary I. “Metric Mutation and Modulation: The Nineteenth-Century Speculations of F.-J. Fétis.” *Journal of Music Theory*. Vol. 44, no. 2 (Autumn, 2000): 261.

² Bernard, Jonathan W. “Elliott Carter and the Modern Meaning of Time.” *The Musical Quarterly*. Vol. 79, no. 4 (Winter, 1995): 646.

and film, with montages and splices putting small pieces together to create a whole; encouraged him to consider music in a different way. Bernard points to Carter's own statements about his interests in the other arts citing various works by other artists and how some of these elements translate to musical ideas in Carter's music. It is also clear that Carter was looking for something different when he said:

“I suddenly realized that, at least in my own education, people had always been consciously concerned only with this or that peculiar local rhythmic combination or sound-texture or novel harmony and had forgotten that the really interesting thing about music is the time of it--the way it all goes along.”³

Carter's life experiences and search for new ways of expression combined to lead him in the directions he pursued in his compositions.

Expanding the means of rhythmic manipulation has allowed Carter to create music that is constantly changing and still related to previous ideas within a given piece. In some ways this is like theatre. A character will almost never have the same line twice in one play. They may have similar lines or lines that express similar ideas but they will be altered to reflect the context of the particular moment. Similarly, Carter rarely restates materials literally. Instead, he comes back to ideas but alters them to reflect the particular moment within the piece. The other moments that have already occurred and the moments that will occur effect how a gesture will be altered at any given moment within a piece. This gives Carter's music a sense of expressivity and awareness that is interesting and engaging.

In the *Cello Sonata* (1948) and the works that followed, Carter began to experiment with rhythm, tempo, sense of time, harmonic structures, pitch relationships and formal design. The focus here will be on the other possibilities in rhythm and time such as creating a pulse that is different than the pulse marked in the score, multiple layers of music with different pulses

³ Edwards, Allen. *Flawed Word and Stubborn Sounds: A Conversation with Elliott Carter*. New York: W.W. Norton and Company Inc., 1970: 90.

simultaneously, tempo modulations⁴ and written out gradual tempo shifts such as *ritardando*, *accelerando* or *rubato*. In Carter's case these concepts are more than simple experiments. They are used to create an expressive musical discourse capable of reflecting multiple and constantly changing musical ideas.

Elliott Carter's works generally are of considerable size. Pieces such as the *Double Concerto*, the six string quartets, the *Brass Quintet*, *Variations for Orchestra* or *Night Fantasies* are each twenty minutes or more. Most of his works are for ensembles of four or more instruments with a few exceptions such as *Night Fantasies* or the *Piano Sonata*, both for solo piano. After many requests by various performers for shorter concert pieces, Carter began composing smaller scale works for solo instruments and small ensembles lasting under ten minutes. The first of these works was *Changes* for guitar alone for the guitarist David Starobin composed in 1987. Since then he has composed similar works for solo clarinet, cello, another for guitar, several for small ensembles and many others. Each of these pieces is a microcosm of Carter's style and each includes many of the same concepts as his larger works. In this paper, two such works will be discussed, *Shard* (1997) for solo guitar, and *Figment* (1994) for solo cello. The brief phrases of these two pieces contain examples of different articulated tempo than indicated in the score, polytempo, tempo modulation, and written out *accelerando*, *ritardando* and *rubato*.

Figment was composed in 1994 for the cellist Thomas Demenga. It is about five minutes in length. David Schiff says, "It is an extravagant, exhibitionistic showcase, taking the cello all over its four octave range in a series of brief, dramatically contrasted phrases."⁵ The pitch material of *Figment* is based on the all triad hexachord (012478) found in many of Carter's

⁴ The term "metric modulation" is sometimes used. Since Carter prefers the term "tempo modulations" this term will be used.

⁵ Schiff, David. *The Music of Elliott Carter*. 2nd ed. Ithaca, New York: Cornell University Press, 1998: 148.

other works. It does not serve as a traditional “theme” but rather as a unifying device that relates all of the pitch content of the contrasting phrases to each other.

Shard was composed in 1997 and is also for the guitarist David Starobin. The pitch material of *Shard* is based on the two “all interval” tetrachords (0146) and (0137) both of which are frequently found in many of Carter’s works. This piece was later incorporated in its entirety into the chamber piece *Luimen*. In m. 126-197 of *Luimen*, the guitar plays *Shard* with light accompaniment.

Marked tempo as reference for actual tempos

Frequently in Elliott Carter’s music the pulses that are articulated do not reflect the tempo that is indicated in the score. The tempos in the score are used as a reference point to relate the various tempos and rhythms that are actually heard. Many of his pieces make use of multiple layers of music each with individual tempos. For example in his *Second String Quartet* each instrument has its own vocabulary of intervals, rhythms, character and tempo. Each of these occurs simultaneously with one tempo marked in the score and each instrument articulating its own tempo. In a piece such as this, the marked tempo serves to relate each of the individual lines to each other. This concept occurs in many of Carter’s works. Two examples are the *Third String Quartet* with the instruments divided into two duos, each with a different set of characters, tempos, and movements and the *Double Concerto* for harpsichord and piano where each of the solo instruments have their own orchestra accompanying them.

Carter creates these different tempos by making use of sustained notes that occur at a different speed than the marked tempo or through the use of accents and/or slurs to create rhythmic groupings that articulate a different pulse. Either of these scenarios can occur within a wide range of contexts from simple common rhythms (quarter notes, eighth notes, sixteenth

notes etc...) to very complex tuplets with rests, dotted note values and tied notes. At first these other pulses may seem like syncopations or polyrhythms. They are much more; they actually project other tempos allowing Carter to express multiple characters or moods simultaneously at any given moment in a piece. In *The Musical Languages of Elliott Carter*, Charles Rosen speaks about this technique in the *Double Concerto* (1961):

“What Carter has done is to remove the central beat—except for purposes of pure notation. No Central beat can be heard: the rhythms therefore do not cross, but proceed independently. They are, in fact, cross-tempi or cross-speeds, if you like... There *is* a central rhythmic frame of reference in the Double Concerto but it is no longer a static and immovable principal beat; the frame is the system by which one tempo is transformed in to another in the course of the piece... The bar lines traditionally mark a regular strong beat: in Carter they are often a purely visual aid to the ensemble with only occasionally a genuine significance for the ear”⁶

Shard contains several tempo marks throughout but frequently the actual tempo is something other than the tempo indicated. The piece begins with the tempo marked ♩ = 108 with a gesture that is disjunct and uneven in character. An example of sustained notes articulating a tempo can be seen in m. 1-3. Beginning with the E on the second eighth note of beat 4 of m. 1 to beat 2 of m. 3, notes occur that last five sixteenth notes worth of time making the articulated tempo 86.4 bpm⁷ (the tempo mark ♩ = 86+ appears in m. 18 and is discussed later). The character of this gesture is relaxed, floating and is associated with this tempo. In these measures the sixteenth note is the common rhythmic value between these two tempos. If this passage was isolated or in a different context without concerns of tempo relationships it could be written as quarter notes with a tempo marking of ♩ = 86+ as shown in example 1.

⁶ Rosen, Charles. *The Musical Languages of Elliott Carter*. Washington: Library of Congress, 1984: 26-27.

⁷ “bpm” is the abbreviation of “beats per minute” and is used to measure tempo.



Example 1. Measures 1-3 of *Shard*, articulated tempo different than marked tempo through use of sustained notes with gesture rewritten reflecting articulated tempo.

This passage foreshadows further use of this tempo and mood developed later in the piece. Similar gestures appear throughout the piece such as in m. 41-44 with a line that begins on the low E of the guitar and reaches into the high range of natural harmonics with each note occurring 5 sixteenth-notes after the previous. Measures 15 through 18 are also similar and contain a tempo modulation to the tempo ♩ = 86+.

Measures 46 to 71 of *Shard* are an example of articulating different tempos through the use of note groupings and accents. In this section the tempo marking is ♩ = 144 with several different pulses articulated. In m. 46 on the second eighth-note triplet of beat three through m. 47 the articulated pulse is 108 bpm. This pulse is created by an accent every fourth eighth-note triplet creating a rhythmic grouping of four notes per pulse. The speed of the triplet eighth-note at ♩ = 144 is the same speed as the sixteenth-note at ♩ = 108. The four note grouping of the triplets creates the feel of sixteenth notes at ♩ = 108. Example 2 shows this passage and a version rewritten as sixteenth-notes with the tempo ♩ = 108. The character of this gesture is

staccato and rhythmically active and is associated with this tempo and rhythmic profile. This may seem like syncopation within the context of the triplets. In the context of the entire piece



Example 2. Measures 46-47 of *Shard*, articulated tempo different than marked tempo though use of accents and note groupings with gesture rewritten reflecting articulated tempo.

however, the tempo relationship that Carter is making between the speed, implied tempo and character of this gesture and how it relates to the opening tempo and many other sections of the piece is clear.

In m. 48-49 Carter articulates a pulse of 115.2 bpm. This is executed by the introduction of sixteenth-notes with accents every five notes and is shown in example 3. With the tempo marked $\text{♩} = 144$, the speed of the sixteenth-note is 576 bpm. This is the same speed as the quintuplet sixteenth-note at $\text{♩} = 115.2$ bpm. The perceived tempo is 115.2 bpm. This section contains many groupings of five sixteenth notes with interruptions of groups of three sixteenth notes. The recurrence of the five sixteenth note groupings dominate this section and Carter even changes meter to accommodate these groupings, clearly creating the tempo 115.2 bpm.



Example 3. Note groupings in m. 48-49 of *Shard*, articulated tempo different than marked tempo through use of accents and note groupings.

The piece *Figment* contains only one tempo marking, ♩ = ca. 96 – tempo *flessibile*. As mentioned above, this piece contains many short contrasting phrases that change tempo from phrase to phrase. Instead of changing the tempo indication every two to three measures Carter articulates these tempo changes through the use of sustained notes that occur at a different speed than the marked tempo or through the use of accents and/or slurs to create rhythmic groupings that articulate a different pulse.

In m. 6-11 a different tempo than indicated in the score is articulated with long notes occurring at a tempo of 54.86 bpm, slower than the marked tempo. Example 4 shows these measures. The D^b on the second eighth-note of beat three of m. 6 begins a gesture with notes lasting either seven eighth-notes or seven sixteenth-notes in duration creating as sense of half-notes and quarter-notes at the slower tempo. There is one exception in this passage, the A^b beginning on the fourth sixteen-note of beat two in m. 9 lasts 11 sixteenth-notes. This is close to the feel of a dotted quarter-note in the slower tempo. This gesture and this particular note hint at the written out *rubato* found later in this piece and discussed further below. The character of the gestures at the slower articulated tempo are expressive (they are marked *espressivo*), free and lyrical. Similar gestures occur throughout this piece. Each occurrence

(♩ = 96)

Number of sixteenth notes between attacks: 14 14 7 7 7 11 14

♩ = 54.86

Example 4. Measures 6-11 of *Figment*, articulated tempo different than marked tempo through use of sustained notes with gesture rewritten reflecting articulated tempo.

comes back to the tempo 54.86 bpm with more *rubato* written in as the gesture expands and becomes more expressive.

Another occurrence of this technique in *Figment* is shown in example 5. In m. 12 beginning with beat 2, there are five notes articulated that each last 3 sixteenth-notes in duration. The pulse created here is 128 bpm, faster than the marked tempo. This faster tempo is associated with passages that are more rhythmically active, in strict time and contrast with the expressive lyrical gestures of the slower tempo.

(♩ = 96)

3 3 3 3 3

♩ = 128

Example 5. Measures 6-11 of *Figment*, articulated tempo different than marked tempo through use of sustained notes with gesture rewritten reflecting articulated tempo.

Polytempo: Multiple Tempos Simultaneously

The concept of polytempo or multiple tempos simultaneously was not invented by Carter. Charles Ives composed many pieces with different instruments or instrumental groups playing different tempos simultaneously such as *The Unanswered Question*. Many pieces that contain polytempos have a coincidental character to them. It seems that the music is composed for each layer without awareness of how the combination of the layers will sound. Sometimes this can create interesting combinations. Speaking about the music of Charles Ives Carter says,

“...[T]here seemed to be very large amounts of undifferentiated confusion, especially in the orchestral works, during which many conflicting things happen at once without apparent concern either for the total effect or for the distinguishability of various levels.”⁸

In Carter’s compositions the music for each individual layer, the relationships between each layer, and the effect of all the layers combined are not coincidental but carefully considered. In regards to Carter’s use of this technique Ronald Caltabiano says:

“It can be argued that in the [first] quartet, the individual string parts themselves have no rhythm in the conventional sense, but only pulses, and therefore the piece's rhythm comes from the overlaying of these different pulses.”⁹

The individual layers interact and influence each other in Carter’s music. For example in the *Second String Quartet*, Carter gives each instrument a unique set of intervals, tempos, moods and styles of attack. As the piece unfolds each instrument takes on some element or elements of another instrument as they each impose their individual character on the others.

Carter makes use of polytempo in several places in *Shard*. One example occurs in m. 8-11 and is shown in example 6. In this passage the tempo is marked ♩ = 144. There are two

⁸ Carter, Elliott. “Shop Talk by an American Composer (1960).” *Collected Essays and Lectures, 1937-1995*. Ed. Jonathan W. Bernard. Rochester: University of Rochester Press, 1998:222.

⁹ Caltabiano, Ronald. “Elliott Carter: Towards the Tenth Decade.” *Tempo*. New series, no. 207 (Dec. 1998):6.

$\text{♩} = 144$

Eighth notes
between attacks
upper voice

Triplet eighth notes
between attacks
lower voice

5 5 5 5

3 3

16 4

5 5

3 3 3 3 3

4 4 4 4 4

Example 6. Measures 8-11 of *Shard*, polytempo, the top voice at 58- bpm and the bottom voice at 108 bpm.

separate voices, the upper voice has a series of five all-interval tetrachords lasting five eighth-notes each with a quiet floating character and the lower voice has a series of seven short notes every fourth eighth-note triplet with a louder, staccato character. There are sixteen eighth-note triplets of time between the first note E of the lower voice on the second triplet eighth-note of beat 2 in measure 8 and the next lower voice note A on beat four of m. 9. Beginning with this A, there are six more articulated every four eighth-note triplets. The perceived tempo of the upper voice is 58- bpm (57.6 bpm). This tempo appears marked in the score in m. 25 and lasts for only three measures. The perceived tempo of the lower voice is 108 bpm, the same tempo marked at the beginning of the piece.

A similar situation occurs in m. 23. In this measure the marked tempo is $\text{♩} = 86+$. The upper voice has a quiet sustaining expressive character that articulates a pulse every three

eighth-notes creating a perceived tempo of 58- bpm. The lower voice is again staccato but this time with a subdued dynamic and articulates a pulse of 108 bpm with the note D occurring four times. Each note is four quintuplet sixteenth notes apart. Each situation that poly-tempos occur in *Shard* the lower voice articulates the tempo 108 bpm with a staccato gesture, relating to the tempo marked at the beginning of the piece, against a contrasting tempo and character explored in the piece.

Tempo Modulations

A technique that is frequently associated with the music of Elliott Carter is the tempo modulation. Tempo modulations are used to smoothly change from one tempo to another. Similar to pivot chord tonal center modulations, tempo modulations use pivot rhythms to make the transition from one tempo to another. The pivot rhythm is a rhythmic value in the first tempo that has the same speed as a rhythmic value in the new tempo. Tempo modulations have been used in many pieces from the Renaissance to the present and occur frequently as shifts between simple meter and compound meter or between movements of pieces that have tempos that are somehow related. The first of Carter's works to make extensive use of tempo modulations is the *Cello Sonata*. Richard Goldman says, "All of this [tempo modulations] would be mere ingenuity in arithmetic were it not that the 'Cello Sonata is also a moving piece... The technique gives it a subtlety of motion that is extraordinary and fascinating."¹⁰ As Goldman implies, Carter does not use the tempo modulation as a gimmick. It is a tool to relate musical ideas and to create a sense of continuity from one tempo or gesture to the next. Much like tonal modulations, a well-crafted tempo modulation often masks the exact point of transition from one tempo to another.

¹⁰ Schiff, David. "The Music of Elliott Carter." *The Musical Quarterly*. Vol. 43, no. 2 (April, 1957): 162.

The gesture in m. 4-5 of *Shard* is one example of several tempo modulations in this piece. In these measures, the tempo modulates from 108 bpm in m. 4 to 144 bpm in m. 5. The pivot rhythmic values move at the speed of 432 bpm. If the pulse is 108 bpm, the speed of the sixteenth-note is 432 bpm and if the pulse is 144 bpm, the speed of the triplet eighth-note is also 432 bpm. The sixteenth-notes in m. 4 have an accent every third note creating a sense of groups of eighth note triplets at ♩ = 144. The tempo mark at m. 5 is ♩ = 144 and this measure is filled with eighth-note triplets. The actual modulation occurs at the beginning of m. 4 though it is not clear until m. 5.

Example 7. Tempo modulation from ♩ = 108 to ♩ = 144 in m. 4-5 of *Shard*.

Another example occurs in m. 16-18 of *Shard* and is shown in example 8. In m. 15 the tempo is marked ♩ = 108 and in m. 18 the tempo is marked ♩ = 86+. The pivot rhythm moves at the speed of the new tempo, 86.4 bpm (86+ bpm). Five sixteenth-notes at ♩ = 108 equal the same amount of time as one quarter-note at ♩ = 86+. Beginning with the E and A sixteenth notes on the fourth sixteenth note of beat one in m. 16, there is an accent every five sixteenth-notes. Carter blurs the point of modulation by using either a sixteenth-note paired

with a quarter-note or an eighth-note paired with a dotted eighth-note to create irregular groupings that add up to five sixteenth-notes of time.

This particular tempo modulation begins a section of tempo instability in m. 15-29. The marked tempos shift quickly through four different tempos in a span of 14 measures. The tempos are ♩ = 108 in m. 15, ♩ = 86+ in m. 18, ♩ = 58- in m. 25 and ♩ = 72 in m. 28. In m. 29 the tempo becomes stable again with a return to the marked tempo ♩ = 108. This is much like tonal instability found in developmental sections in tonal music. In such a section of music a sense of instability and tension is created through frequently shifting tonal centers by modulating to several different keys within a short time span.

Example 8. Tempo modulation ♩ = 108 to ♩ = 86+ in m. 16-18 of *Shard*.

Written Out *Ritardando*, *Accelerando* and *Rubato*

Carter makes use of precise gradual shifts in tempo through the use of “written out” *accelerando*, *ritardando* and *rubato*. Each of these has been used in music for centuries and much has been written about these issues in discussions of performance practice. The term

*rubato*¹¹ has been used to describe the small shifts in tempo that occur in performing a gesture “expressively” where certain notes are held slightly longer or shorter than actually indicated. There is much debate about how much the tempo can shift and over what time span the shift can occur. In Carter’s music, there is little debate as he is very specific about how these tempo shifts should be executed. The terms *accelerando* and *ritardando* are frequently used in a piece of music to indicate a general speeding up or slowing down of the tempo. Instead of putting these terms in the score, Carter notates rhythms that are gradually longer or shorter. This gives precise indications of how much and when a *ritardando* slows or an *accelerando* speeds up.

Measure 13 of *Figment* is an example of written out *accelerando* and is shown in Example 9. Beginning with beat two of this measure, the rhythmic values are sixteenth-notes followed by sixteenth-note quintuplets on beat three and sixteenth-note sextuplets on beat 4. This passage contains three short fragments that expand and accelerate. The first fragment of this gesture is two sixteenth-notes followed by three quintuplet sixteenth-notes and finally a gesture of five sixteenth-note sextuplets. This gesture is between two gestures with a character similar to m. 6-11 of *Figment*, with strict time and articulated tempo of 128 bpm.

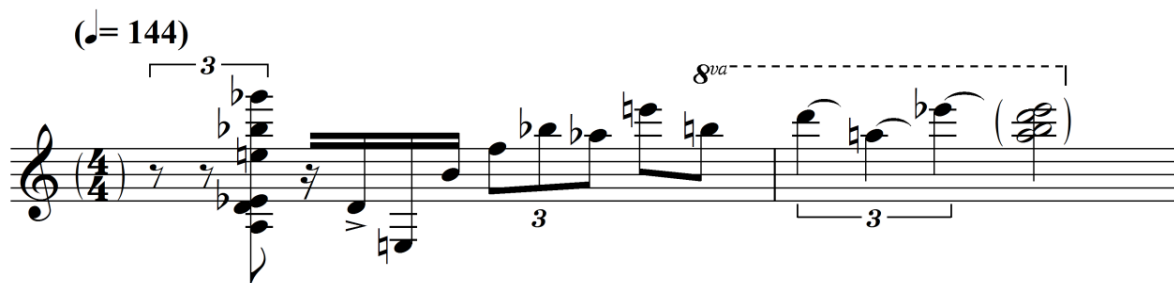


Example 9. Written out *accelerando* in m. 13 of *Figment*.

Example 10 is an example of written out *ritardando* that occurs in m. 70-71 of *Shard*. The second sixteenth-note of beat 2 in m. 70 begins the final gesture of the piece. It begins

¹¹ The term *rubato* is used here in reference to music with a freer, less regular or uneven sense of rhythm.

with three sixteenth-notes followed by three triplet eighth-notes, two eighth-notes and three triplet quarter-notes. This gesture connects the rhythmically active music previously discussed beginning in m. 48 to the final chord of this gesture that is similar to the floating character of the music first heard in m. 1-3 and the chords from the upper voice of m. 8-11.



Example 10. Written out *ritardando* in m. 70-71 of *Shard*.

Example 11 shows another example of written out *ritardando* in m. 55-58 of *Figment*. The *ritardando* begins on beat 4 of measure 55 with the A in the treble clef. From here, each pitch sustains one sixteenth-note longer than the previous pitch until the B on the second eighth-note of beat 2 in m. 57. The A lasts 5 sixteenth-notes, the G[#] lasts 6 sixteenth-notes, the D[#] lasts 7 sixteenth-notes, the G^b lasts 8 sixteenth-notes and the final note of this gesture lasts about 16 sixteenth-notes. This gesture comes after a section that sees the lyrical slow character transition into the faster rhythmic character with some *rubato* that is characteristic of the lyrical slow music.



Example 11. Written out *ritardando* in m. 55-58 of *Figment*.

An example of written out *rubato* occurs in m. 86-96 of *Figment*. In this passage each note or diad sustains for a different amount of time. It begins with a four note chord with the bottom two notes sustaining for 8 eighth-notes followed by a pair of single notes that last 3 and 4 eighth-notes respectively. Measure 88 begins with a diad lasting 4 eighth-notes followed by three more diads through m. 90 lasting 6, 8 and 6 eighth-notes respectively. This is followed by two short notes in m. 91 lasting 2 eighth-notes each. The second half of m. 91 into m. 94 contains a series of six diads or single notes lasting either 3, 4, or 5 eighth-notes each. From beat three of m. 94 through the down beat of m. 96 the three single notes get longer as the first lasts 6 eighth-notes, the second lasts 7 eighth-notes and the final note lasts 9 eighth-notes.

(♩ = 96)

The image displays two staves of musical notation in 4/4 time, with a tempo marking of (♩ = 96). The notation includes various note values, rests, and slurs. Below the staves, horizontal brackets indicate the duration of each note or diad in eighth notes. The first staff covers measures 86-90, and the second staff covers measures 91-96. The durations are as follows:

Measure	Note(s)	Duration (eighth notes)
86	Four-note chord (bottom two notes)	8
86	Two single notes	3, 4
88	Diad	4
89	Diad	6
90	Diad	8
90	Diad	6
91	Two short notes	2, 2
91-94	Six diads or single notes	3, 4, 5, 3, 4, 5
94-96	Three single notes	6, 7, 9

Note durations in eighth notes

Example 12. Written out *rubato* in m. 86-96 of *Figment*.

This passage is marked *espressivo* and is an elaboration of the character found in the slow expressive lyrical character first heard in m. 6-11. Each time this character appears its gestures contain more *rubato*, as though this character is becoming more unstable. Notating these gestures in this way gives clear indications as to which notes should be held longer and which

notes should be rushed. If these passages were notated with simpler more traditional rhythmic values with the word *rubato* written above, the performer would be left to decide which notes are more significant and which are less. It should also be noted that some of these gestures simply feel like notes with different durations. In the context of the rest of this piece, the gestures with this character are an expressive loosening of the steady pulse set up earlier. Throughout this piece each time the slow expressive lyrical character appears there are more uneven shifting note durations.

Conclusion

The rhythmic practices of Elliott Carter are engaging in many ways. As Bernard says, “American music owes a great deal to the fact that Carter was seized, at a crucial time in his career, with the same desire for rhythmic freedom that had infected Ives, Cowell, and Nancarrow.”¹² His works have given composers wishing to compose in this manner many examples of how to expand their rhythmic and tempo vocabulary. Carter’s use of different articulated tempo than indicated in the score, polytempo, tempo modulation, and written out *accelerando*, *ritardando* and *rubato* are not simply for the sake of doing these things but rather serve the purpose of allowing a musical idea to be expressed in a number of ways and multiple ideas to be expressed simultaneously. The concepts of rhythm and time discussed in this paper are only part of the musical language of Elliott Carter. These concepts in addition to his harmonic and melodic practices allow him to create engaging pieces with multiple characters each with unique tempos, moods and rhythmic gestures.

¹² Bernard, Jonathan W. “The Evolution of Elliott Carter’s Rhythmic Practice.” *Perspectives of New Music* 26, no. 2 (Summer 1988): 197.

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APPENDIX A: Program from Graduate Composition Recital

EAST CAROLINA UNIVERSITY School of Music
presents

Christian Loeb

in graduate recital

Saturday, November 14, 2009
A. J. Fletcher Music Center
1:00 p.m.

Program

Shaun and Miranda Sitting in a Tree

Steven Lewis, horn; James Old, trumpet

Three Moods

Mournful

Peaceful

Anxious

Laura Eis, Viola; John Porter, guitar

86'd

John Porter, guitar; Christian Loeb, guitar

Experiment!

Electronic media

That Thursday

Tim Messina, tenor; Tomoko Kato, piano

A Constant Reminder

Chris Ferrara and Johnathan Spence, violin;

Andrew Minquez, viola; Stephen Duran, cello

—intermission—

3rd Track for my Son

Electronic media

Inner Struggle

Katherine Dennis, violin; Rob Wilbur, clarinet;
Annie Hostetter, bassoon; Matthew Barbee, marimba

Incongruous

Matthew Barbee, marimba

Speculative Speculations

I.

II.

III.

Nicole Frazee, flute; Rob Wilbur, Clarinet; Tomoko Kato, piano;

Matthew Barbee, percussion; Sarah Wedgewood, violin;

Stephen Luehrman, viola; Kathryn York, cello;

Rafael Valle, conductor

Program Notes

Shaun and Miranda Sitting in a Tree was composed as a gift for my good friend Shaun Crowdus and his wife Miranda on the occasion of their wedding. Shaun is a trumpet player and Miranda is a horn player so I thought it would be fun to write a piece for them and their instruments. The interplay between the two instruments is symbolic of the relationship in a marriage.

Three Moods is a set of short pieces I wrote as compositional etudes. The idea was to musically create different moods.

86'd was originally composed as a piece of music for my friend Kimberly's senior choreography project. Kimberly had the idea of abstractly depicting a shift at a restaurant as a server. As a former line cook, this topic spoke to me. The piece begins with canons at various speeds before things begin to break down and turn into chaos. After the chaos there is a return to some of the previous material.

Experiment! is the first piece I composed in the electronic music studio. As the title suggests, I was experimenting a lot. The source sounds used to create this piece were all generated from a late 1970's Moog synthesizer. From there I manipulated and organized the sounds using the computer programs Soundhack and Pro Tools.

That Thursday is about a particularly bad Thursday I had a few years ago. This piece is dedicated to my son Zachary.

on that Thursday

on that Thursday

my heart ripped

pain surged like lightning

more tears than breaths

on that Thursday

on that Thursday

life changed forever

when the door closed

with half of me inside

I am sorry it has to be this way

A Constant Reminder was originally composed for a reading of string quartet music by student composers during the New Music Festival @ECU. It has since been revised. The piece consists of contrasting sections of slow ethereal music juxtaposed against rhythmic passages in asymmetrical meters. The title came from some writing on the wall of my office during time as a graduate assistant at ECU. It seemed appropriate as it took a long time for me to finish this piece.

The idea for the piece *3rd Track for my Son* came to me while my son and I were riding in the car. We were listening to the cd *Diary* by the band Sunny Day Real Estate. When we got to the beginning of the third track my son asked me to skip back to the beginning of the song several times. The first few seconds of that song are the first thing you hear in my piece. This material serves as the source material for the rest of the piece. There is also another abstracted quote in this piece from a Jimi Hendrix song that was an early influence on me as a musician. This piece is dedicated to my son Zachary.

Inner Struggle was composed around the same time that my brother David Jr. was fighting for his life in a battle against Crohn's Disease. My father David Sr. was deeply affected by watching his son lying in a hospital bed and not being able to do anything. Around the same time I was dealing with some personal issues of my own. With all of this going on in our lives the title seemed appropriate. The piece is made of several contrasting sections that conflict with each other in mood, rhythm, texture and tempo. Each of these sections are related in some way but also create a sense of internal conflict.

Incongruous began as a short etude for a reading session of solo marimba music. It was later expanded to its current form. The piece explores the range of the marimba and various techniques such as rolls, contrapuntal textures and repeated notes. The opening five measures of the piece present the main motives that are developed throughout the work.

Speculative Speculations began as a piece for a reading session by the group Speculum Musicae. What is now the first movement was played during the reading and I thought the piece was complete. Not long after the reading session I had a lesson with David Rakowski. I showed him what I had written and he said it was the first movement of a multi-movement piece. This was a complete surprise to me as I had "finished" this piece. After some reflection on the piece and a conversation with Dr. Jacobs about this matter, I decided to see if there were other movements that had not been written yet. Over the next few months the second and third movements were written. David Rakowski was right. The first movement of the piece presents several thematic ideas that are developed in the second and third movements.

Acknowledgements

I would like to thank each of the fantastic performers on this recital, without your hard work this would not be possible. Thanks for your feedback and for giving my music a chance. Thanks to Dr. Jacobs who has put up with me and my music for the last several years, I appreciate all of your thoughtful insights and suggestions and for the occasional kick in the rear when I needed it. Thanks to my family for supporting and inspiring me.

APPENDIX B: List of works composed during graduate studies

A Constant Reminder string quartet

Experiment! electronic media

Five Etudes for guitar solo guitar

Inner Struggle mixed quartet (violin, clarinet, bassoon, marimba)

Shaun and Miranda Sitting in a Tree trumpet and horn

So Not a Sonata piano

Speculative Speculations mixed ensemble (flute, clarinet, piano, violin, viola, cello,
percussion)

That Thursday tenor and piano

Thicker than Water rock trio (electric guitar, bass guitar, drum set)

Third Track for my Son electronic media

